Fact Sheet

UNITED STATES AIR FORCE

377TH AIR BASE WING (AFMC)
Office of Public Affairs, Kirtland Air Force Base, NM 87117 505-846-5991

# Providing Engineering and Technology Experiences for Students Flight

The Air Force Research Laboratory La Luz Academy's Providing Engineering and Technology Experiences for Students (PETES) Phillips Research Site Flight, for seventh graders, comprises four nonconsecutive days of instruction.

This unique, exciting, hands-on curriculum uses research topics related to the AFRL's Directed Energy and Space Vehicles Directorates as a springboard for student investigation. The curriculum incorporates teamwork and the Air Force Core Values: Integrity First, Service Before Self and Excellence in All We Do.

The La Luz Academy is at Kirtland Air Force Base, New Mexico.

The PETES PRS Flight focuses on waves, electromagnetic spectrum, electricity, electronic components, gyroscope technology, materials science and space weather. Students explore wave movement with slinky coils and use light boxes to learn about visible light and color. The Jell-O$^{R}$ Laser Lab activity provides an opportunity for students to experiment with lasers, lenses and color (an edible experiment). Light-sensitive flying discs and sunscreen are used to investigate ultraviolet light and students also create an ultraviolet detector with color-changing beads.

Exploration of electricity begins with students using a small light bulb, a piece of copper wire and a battery to complete a circuit. Students then use series and parallel circuit boards to continue discovering properties of electricity. After researching the function of various electronic components, students then solder the electronic components to a printed circuit board, making a flashing light-emitting diode badge that says, "I've got the power!" The printed circuit boards

were developed by AFRL La Luz Academy in collaboration with a local company which also produces these boards.

Three types of gyroscopes provide experiences with "attitude control" related to satellite systems. Students experiment with basic gyroscopes and gyroscopes in tubes and then become part of a gyroscopic system that involves a rotating chair and a bicycle tire.

Everyday materials are used to explore science and technology in the real world. Students complete activities involving concrete, sports equipment, sensors and memory wire. Then they learn about the role composites play in high-tech applications.

Investigation of space weather begins with developing an understanding of how the sun affects systems on Earth. Students experiment with magnets and relate their observations to sunspots and the Earth's magnetic field. They also observe the sun with a solar telescope and then graph sunspot activity and satellite function. A Van de Graaff generator is used to help students understand solar wind.

For more information, contact AFRL La Luz Academy at (505) 846-8042 or go to:
http://www.vs.afrl.af.mil/TechOutreach/TT/K-12.aspx

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